# Chapter 24
# Brave New Digital Tools for Action Research in Education:
## A Beginner's Guide

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## ABSTRACT

*Due to the rapid development of digital media, the work of researchers in all scientific disciplines has dramatically changed. The objective of this chapter is to give a brief overview of digital tools that can be used for action or practice research in the context of seamless learning. It is the intention of the authors to, on the one hand, provide some initial orientation and deeper insight into the complex subject matter of digital science. On the other hand, researchers shall be equipped with a user guide that encourages them to try out various digital tools for searching, collecting, annotating, analyzing, visualizing, interpreting as well as publishing information. Owing to the dynamic nature of the issue under review this chapter will undoubtedly only offer a snapshot.*

## INTRODUCTION

The primary reasons for engaging in action or practice research in the field of education are the improvement of teaching skills and the development of schools as learning organizations. Therefore, action research is deeply embedded in society and is carried out by a single educator or researcher or by a group of colleagues who share an interest in a common problem. Two important aspects required in action research are the integration of all participants (i.e. teachers as well as students in the field of education) and the creation of appropriate ways for participation. As action research is characterized by a constant change between theory and practice, there are a number of different approaches and methodologies that can be applied. For this purpose, digital research tools cannot only support the research process, but also significantly simplify as well as accelerate it and thus enable seamless learning.

Resulting mainly from profound and continual processes of reflection-in-action and reflection-on-action (cf. Schön, 1983; 1987) the process of continuous seamless learning is one of the defining characteristics of professional practice based on action research.

Thus it can be taken for granted that the notion of "seamlessness" is essential for both, developmental processes in continuous action research as well as for learning process associated with it. In most cases research and learning processes converge to a seamless whole. However, this paper mainly focuses on the aspect of research and on the benefits of using digital tools for seamless research in an educational context.

Against this background, the objective of this chapter is to give a brief overview of the current state-of-the-art of digital tools for action research. It is the intention of the authors to provide a beginner's guide for orientation that invites all those involved, from teachers to students, in a special research or development process, to gain an in-depth insight into the complex subject matter of digital science. Furthermore, researchers shall be encouraged to try out various digital tools for various processes like searching, evaluating, visualizing, interpreting and publishing information.

Gasteiner and Haber (2010) point out that due to the development of digital media, the modus operandi of researchers of all scientific disciplines has rapidly changed. While in former times a well-equipped library, a card index and a typewriter were sufficient for carrying out excellent research, nowadays personal computers, notebooks or tablet computers, the internet, and the use of digital research tools have become vital and are ubiquitous. Today, several years after the publication of their book, this technological development is progressing even more rapidly and the winged words "Tempi passati! [in English Bygone times!]" (Gasteiner & Haber, 2010) probably express less regret but rather relief that the days of analogue research are finally over.

Concurrent with this development, the authors of this chapter, working at the University of Teacher Education Vienna, were looking into action research processes in education that can be supported with the help of digital tools. The first selection of useful digital research tools and websites was compiled within the framework of an in-service teacher training seminar in the field of university didactics (cf. Bauer & Himpsl-Gutermann, 2015). The collected research tools were finally displayed and shared in form of an electronic portfolio (cf. Himpsl-Gutermann & Bauer, 2015), which serves as the starting point for the present analysis of digital tools in action research.

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